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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**APPLICANT:** Graham Anthony Inchley **GROUP:** 3618  
**SERIAL NO:** 10/767,639 **EXAMINER:** Unknown  
**FILED:** January 29, 2004  
**FOR:** TRUCKS FOR SKATEBOARDS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313

Sir:

## TRANSMITTAL OF CERTIFIED COPY

Attached please find the certified copy of the foreign application from which priority is claimed for this case:

**Country:** United Kingdom  
**Appln No.:** 0302143.3  
**Filing Date:** January 30, 2003

Respectfully submitted,

  
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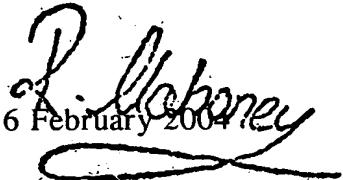
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Dated

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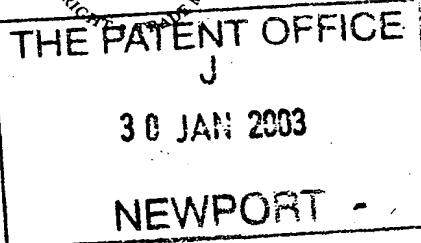
  
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P01/7700 0.00-0302143.3

## Request for grant of a patent

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The Patent Office

 Cardiff Road  
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1. Your reference

B 1043

2. Patent application number

(The Patent Office will fill in this part)

0302143.3

30 JAN 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

GRAHAM ANTHONY  
INCHLEY, 7 Marl's Road,  
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08554933001

4. Title of the invention

TRUCKS FOR SKATEBOARDS.

5. Name of your agent (if you have one)

J. A. BOUTLAND.

"Address for service" in the United Kingdom  
 to which all correspondence should be sent  
 (including the postcode)

J.A. BOUTLAND, Chartered Patent  
 Agent,

8, HEATHERSTONE AVENUE,  
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 SO45 4LQ

22812001

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

No.

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
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Patents Form 1/77

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Description

4  
2  
1  
4

Claim(s)

Abstract

Drawing(s)

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination  
(Patents Form 10/77)

Any other documents  
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I/We request the grant of a patent on the basis of this application.

11. Signature

*J.A. BOUTLAND*

Date 29.1.2003

12. Name and daytime telephone number of person to contact in the United Kingdom

J.A. BOUTLAND, Chartered Patent Agent.  
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## TRUCKS FOR SKATEBOARDS

This invention relates primarily, but not exclusively, to trucks for skateboards, although as used herein, the term "truck" relates to steering devices for means of transport other than skateboards. For example, roller-skates, or other devices that use a two-bogey, four-wheel, "lean to steer" method of changing direction.

5

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The invention provides a truck for a skateboard which enables a substantial degree of positive steering and requires less material to manufacture than a conventional truck so as to enable a skateboarder to improve his performance.

15

According to the invention, a truck for a skateboard comprises a base structure for attachment to the skateboard deck, a yoke assembly having spaced-apart portions flexibly located by the base structure, and a king-pin assembly including a king-pin for clamping the base structure and the yoke assembly together, so that with a pair of skateboard wheels carried by the truck, the arrangement is such that the rotational axis of the wheels is disposed substantially at right angles to the longitudinal axis of the king-pin and said rotational axis is also disposed at a steering head angle of between 45° and 20° to the vertical when the skateboard is at rest, on the ground.

20

The steering head angle is preferably at substantially 30° to the vertical.

The king-pin assembly is preferably disposed between the spaced-apart portions flexibly located by the base structure.

25

An embodiment of the invention will now be described by way of example only, with reference to the accompanying drawings, wherein:-

30

Figure 1 is a side view in medial section of a truck for a skateboard,  
Figure 2 is an inverted view of the base structure thereof,  
Figure 3 is an end view in the direction of arrow A of Figure 2,  
Figure 4 is an end view of the yoke assembly,

Figure 5 is a side view of the yoke assembly, and Figures 6, 7 and 8 and Figures 9, 10 and 11 illustrate details of bushes that may be employed by the yoke assembly.

5 With particular reference to Figure 1, a truck 1 for a skateboard 2 comprises a base structure 3 detachably secured to the underside 30 of the skateboard deck 4, a yoke assembly 17 having spaced-apart (upper and lower) portions 17a, 17b flexibly located by the base structure 3, and a king-pin assembly 5 including a king-pin 7 for clamping the base structure 3 and the yoke assembly 17 together.

10 The arrangement is such that with a pair of skateboard wheels 6 carried by the truck 1, the rotational axis 8 of the wheels 6 is disposed substantially at right angles to the longitudinal axis 9 of the king-pin 7 and said axis rotational 8 is also disposed at a steering head angle  $\alpha$  of substantially  $30^\circ$  to the vertical, (represented by vertical line 10), when the skateboard is at rest on the ground, i.e. in the position shown. The steering head axis is represented by line 31.

15

20 The longitudinal axis 9 of the king-pin 7 extends between the flexibly-located upper and lower portions 17a, 17b. This placement of the king-pin 7 assists control of the skateboard 2.

25 The base structure 3 has a flanged portion 14 defining a flat surface 15. The portion 14 is releasably clamped to the underside of the skateboard deck 4 by four nut and bolt assemblies, (not shown), located by drilled holes 16 (Figure 2).

Ground level is indicated by reference numeral 24.

30 The yoke assembly 17 carries the king-pin assembly 5, the king-pin 7 of which is located by axially-spaced bushes 18, 18a of resilient plastics material, such as polyurethane. The bushes 18, 18a are separated by an inwardly disposed flange portion 33 of the yoke assembly 17. The king-pin 7 has a button shaped head 7a and is releasably secured in place by a locknut 19. The base structure 20 has a lower, spherical end 20a which is

received by a cooperating bearing 21 of resilient polyurethane located by a concave hollow 34 formed in the lower yoke portion 17b.

The axis 8 of the wheels 6 is defined by a pair of hollow stub axles 22 (Figure 4) upon which the wheels are mounted. The stub axles 22, which are of steel, are located by the lower end 17b of the yoke portion 17, and are disposed well below the king-pin assembly 5. The arrangement reduces weight.

The upper end 17a of the yoke portion 17 is of part spherical form and is located by a 10 cooperating bearing 23 of resilient polyurethane. The bearing 23 comprises a plug secured in the base structure 3.

The skateboard 2 is conveniently provided with two trucks 1 mounted on the skateboard 15 deck 4 in tandem. Each truck is a mirror image of the other. As the skateboard deck 4 is tilted towards the intended change in direction, the yoke assemblies 17 rotate about their steering head axis 31. Tilting the skateboard deck 4 to the left for example, causes the front and rear outer wheels 6 to move apart, and the front and rear inner wheels 6 to move together, resulting in the intended change of direction.

20 When pressure is released from the skateboard deck 4, the yoke portions 17 are returned to their central positions by resilience in the bushes 18, and 18a. The steering head angle of each truck 1 remains substantially constant during manoeuvres.

25 The material of both the base structure 3 and yoke assembly 17 of each truck 1 is preferably of T6 spec aluminium alloy or titanium. The king-pin 7, which preferably is of high tensile steel, acts as a locking device to prevent the yoke portion 17 separating from the base structure 20. The yoke portion 17 is disposed between the bushes 18, 18a so that a substantially uniform compression force, (adjustable, depending on the 30 skateboard rider's weight), is imparted. This compressive force keeps the yoke portion 17 in a substantially central position. The bushes 18, 18a also assist in locking (clamping) the yoke portion 17 to the base structure 20 bearings.

The bushes 18, 18a can be changed to suit requirements. For example, salom, downhill speed racing or bowl riding.

5 The yoke portion 17 supports the associated wheel stub axles 22 which in turn supports the wheels 6 and their bearings. As steering inputs are made, the yoke portion 17 pivots about the base plate 20 and a change in direction occurs. The width of the yoke portion 17 can be changed to suit requirements.

10 To reduce weight, up to an inner one third of stub axle material could be removed.

15 The upper and lower bearings 23, 21 serve as shock absorbers and ensure a good fit between the yoke portion 17 and base structure 20.

20 In the modified yoke assembly illustrated by Figure 5, the bearing 21 is held in place by a plug 34 secured in the lower portion 17b of the yoke assembly 17. Figures 6, 7 and 8 illustrate alternative upper bushes 18. The bush 18 of Figure 8 has a frusto-conical profile.

25 Figures 9, 10 and 11 similarly illustrate alternative lower bushes 18a. The bush 18a of Figure 9 has a chamfered edge.

The shapes of the bushes 18a aid assembly and disassembly of a truck 1, as they then avoid interference with adjacent parts of the truck.

30 As mentioned above, the steering head angle  $\alpha$  may be between  $45^\circ$  and  $20^\circ$  to the vertical. However, an angle of substantially  $30^\circ$  to the vertical is preferred.

It will be appreciated that a truck according to the invention has application other than to a truck for a skateboard. For example, roller-skates or other devices that use a two-bogey, four wheel, lean to "steer" method of changing direction.

## CLAIMS

1. A truck for a skateboard comprising a base structure for attachment to the skateboard deck, a yoke assembly having spaced-apart portions flexibly located by the base structure, and a king-pin assembly including a king-pin for clamping the base structure and the yoke assembly together, so that with a pair of skateboard wheels carried by the truck, the arrangement is such that the rotational axis of the wheels is disposed substantially at right angles to the longitudinal axis of the king-pin and said axis is also disposed at a steering head angle of between 45° and 20° to the vertical when the skateboard is at rest on the ground.
2. A truck as claimed in Claim 1, wherein the steering head angle is substantially 30° to the vertical.
- 15 3. A truck as claimed in Claim 1 or 2, wherein the longitudinal axis of the king-pin extends between the spaced apart portions flexibly located by the base structure.
4. A truck as claimed in Claim 1, 2 or 3, wherein the king-pin is located by a pair of axially-spaced bushes of resilient material carried by the yoke assembly.
- 20 5. A truck as claimed in Claim 4, wherein the bushes are separated by an inwardly disposed flange portion of the yoke assembly.
6. A truck as claimed in Claim 4 or 5, wherein one bush is of frusto-conical form.
- 25 7. A truck as claimed in any one of Claims 4, 5, or 6, wherein one bush has a chamfered edge.
8. A truck as claimed in any one of Claims 4 to 7, wherein resilient material of the bushes is polyurethane.

9. A truck as claimed in any one of Claims 1 to 8, wherein one spaced-apart portion of the yoke assembly is of part-spherical form.

10. A truck as claimed in Claim 9, wherein the part-spherical portion of the yoke assembly is located by a co-operating bearing of resilient material.

5

11. A truck as claimed in Claim 10, wherein the co-operating bearing is of polyurethane.

10

12. A truck as claimed in anyone of Claims 8 to 11, wherein the other spaced-apart portion of the yoke assembly is formed with a concave hollow which locates a bearing of resilient material which receives a spherical part of the base structure.

13. A truck as claimed in Claim 12, wherein said bearing is of polyurethane.

15

14. A truck substantially as herein before described, with reference to Figures 1 to 4 of the accompanying drawings.

15. A truck as claimed in Claim 14, modified substantially as herein before described, with reference to Figures 5, or 6, 7 and 8, or 9, 10 and 11 of said drawings.

20

16. A skateboard provided with a pair of trucks each as claimed in any one of Claims 1 to 15.

## ABSTRACT

With reference to Figure 1, a truck 1 for a skateboard 2 comprises a base structure 3 detachably secured to the underside 30 of the skateboard deck 4, a yoke assembly 17 having spaced-apart upper and lower portions 17a, 17b flexibly located by the base structure 3, a king-pin assembly 5 including a king-pin 7 for clamping the base structure 3 and the yoke assembly 17 together, and a pair of skateboard wheels 6 carried by the truck 1.

The arrangement is such that the rotational axis 8 of the wheels 6 is disposed substantially at right angles to the longitudinal axis 9 of the king-pin 7 and said axis 8 is also disposed at a steering head angle of substantially  $30^\circ$  to the vertical, (represented by vertical line 10), when the skateboard is at rest on the ground, i.e. in the position shown. The steering head axis is represented by line 31.

The king-pin axis 9 extends between the flexibly-located upper and lower portions 17a, 17b.

Figure 1

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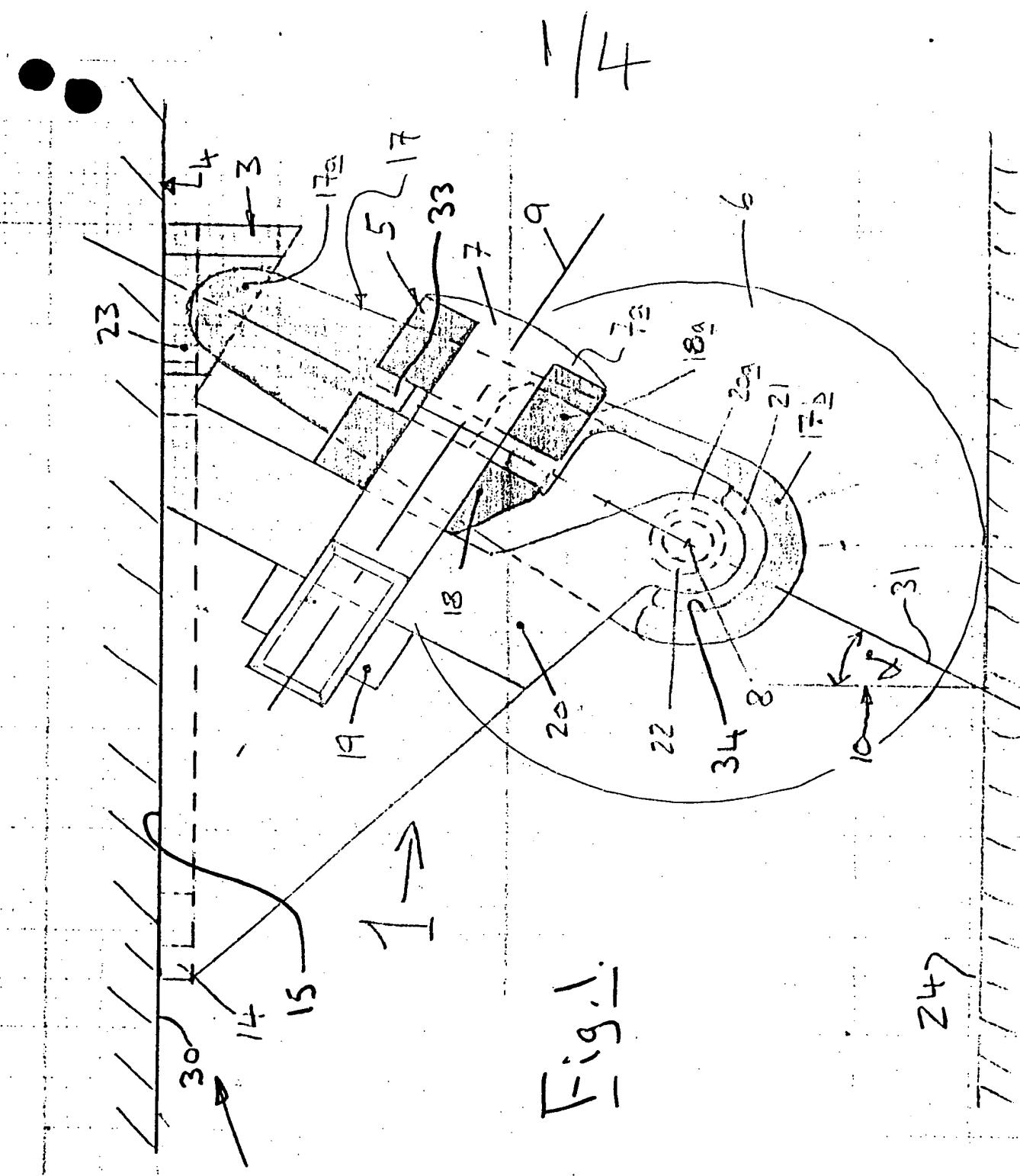
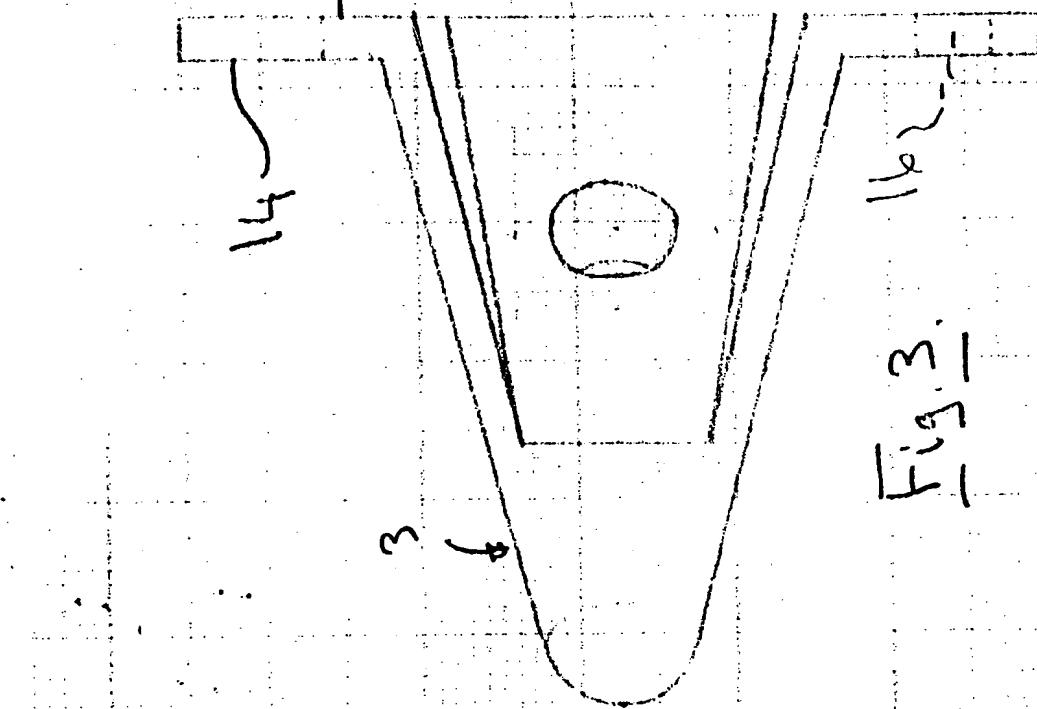
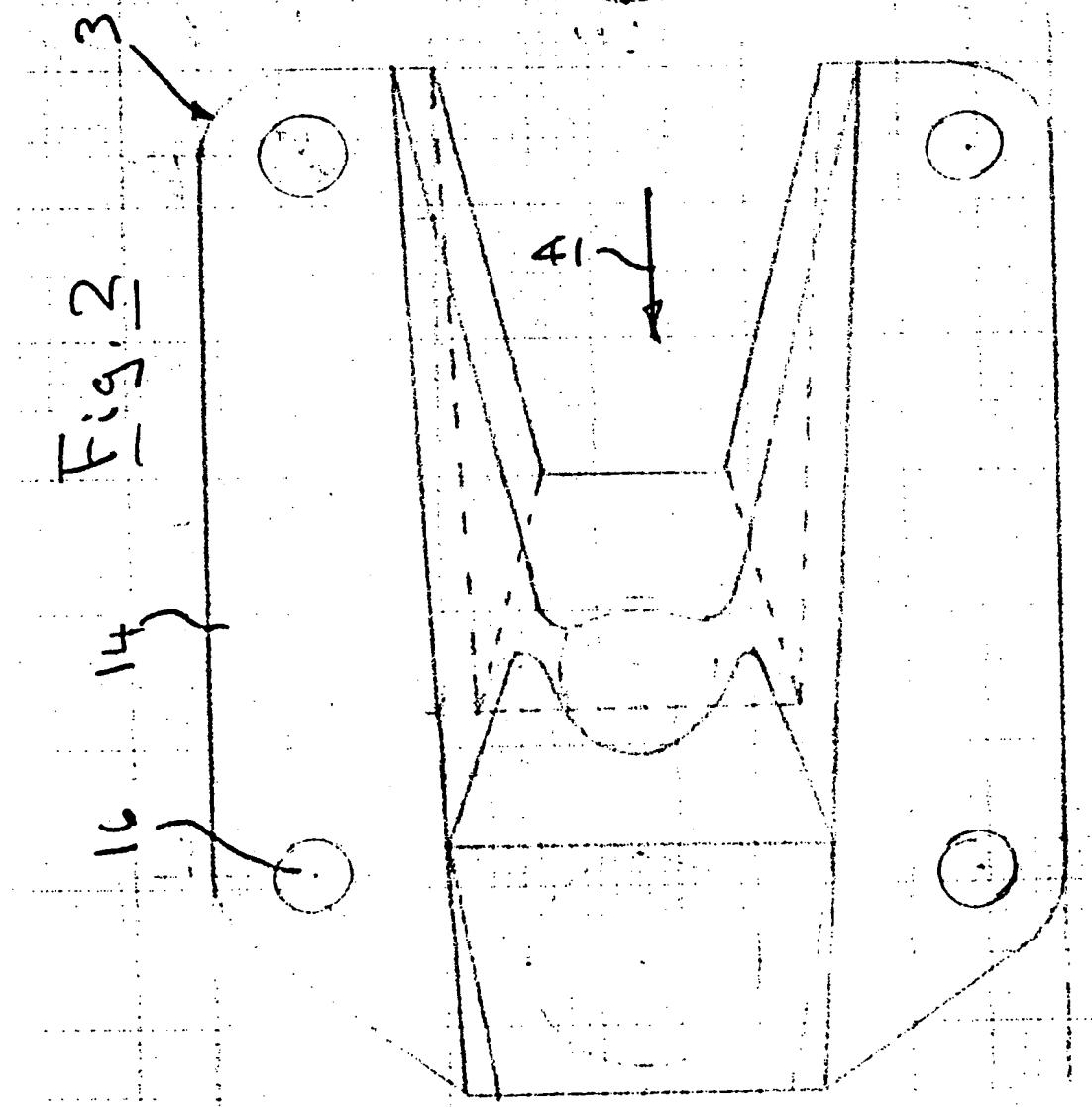


Fig. 1.

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Fig. 3. 142

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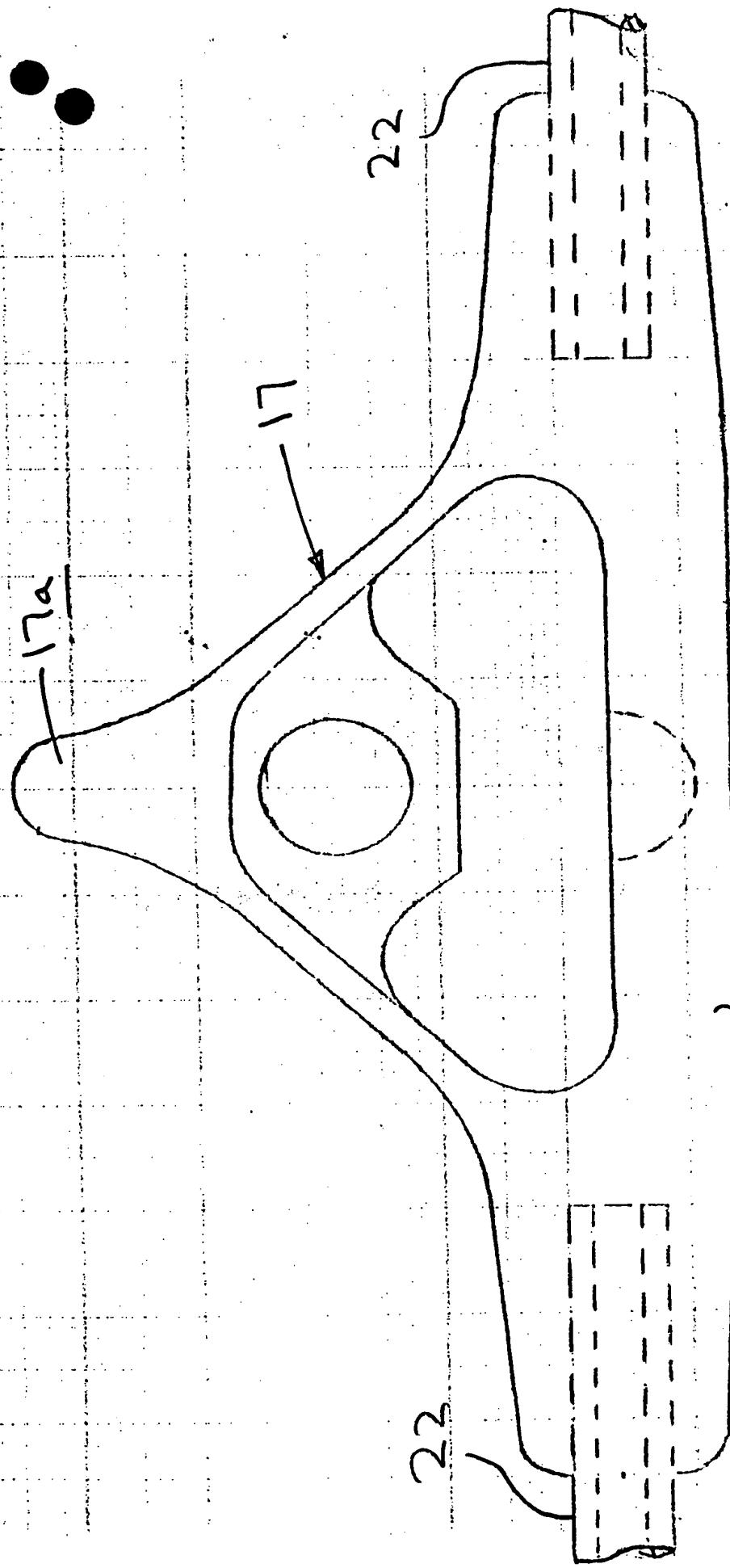


Fig. 4.

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Fig. 6.



Fig. 7.

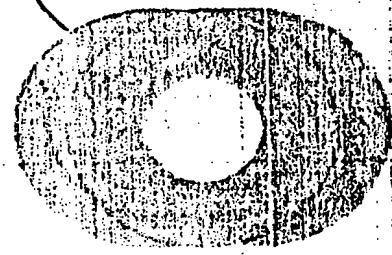


Fig. 8.



Fig. 9.



Fig. 10

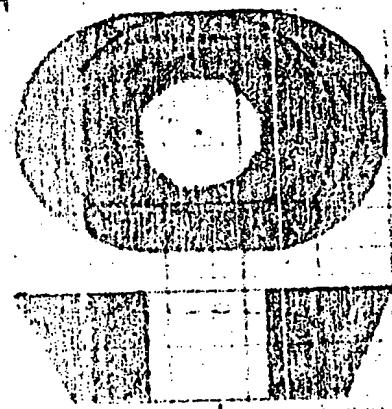


Fig. 11.

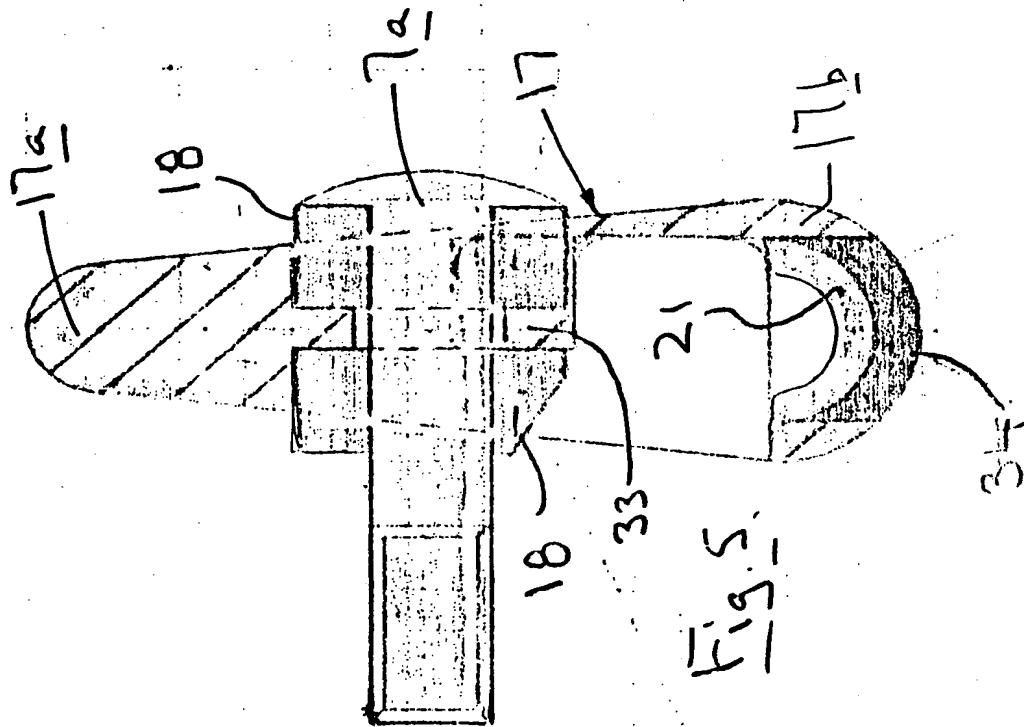


Fig. 5.

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